

## **Abstract**

A tunable capacitor that introduces significantly less loss, if any, costs less and is smaller than previously available. A bias electrode is coupled to a  
5 FE material. The capacitor electrodes are electro-  
magnetically coupled to the FE material, such that the  
capacitor electrodes and the bias electrode are not  
touching. Only non-conductive material is in the gap  
defined by the capacitor electrodes. The bias electrode  
10 is used to apply a variable DC voltage to the FE  
material. A capacitor electrode serves as a DC ground  
for producing a variable DC field between the bias  
electrode and the capacitor electrodes.

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